Mapping of Digital Health Tools and Technologies:
Syrian Arab Republic Country Brief

July 2022

World Health Organization

unicef ❤
for every child

UNFPA

Mapping of Digital Health Tools and Technologies:

Syrian Arab Republic Country Brief

July 2022

Joint regional mapping of digital health tools and technologies for Reproductive, Maternal, Newborn, Child and Adolescent Health

WHO EMRO

UNFPA ASRO

UNICEF MENARO

Table of Contents

Abbreviations and Acronyms

AFRO	African Regional Office
ASRO	Arab States Regional Office
CO	Country Office
COD	Common Operational Datasets
DHA	Digital Health Atlas
DHIS2	District Health Information System 2
DIAL	Digital Impact Alliance
DICE	Digital Health Center of Excellence
DIIG	Digital Implementation Investment Guide
DIMS	Drugs Information Management System
DPT3	Diphtheria, Pertussis, Tetanus 3
EHR	Electronic Health Record
EMR	Electronic Medical Record
EMRO	Eastern Mediterranean Regional Office
EPI	Extended Programmed for Immunization
EU	European Union
EWARS	Early Warning, Alert and Response System
GIS	Geographic Information System
HeRAMS	Health Resources Available Mapping System
HIAST	Higher Institute of Applied Sciences and Technology
HMIS	Health Management Information System
INGO	International Non-governmental Organization
LMIS	Logistics Management Information System
LMS	Learning Management System
MCV	Measles-Containing Vaccine
MENARO	Middle East and North Africa Regional Office
MOH	Ministry of Health
NGO	Non-governmental organization
PHCIS	Primary Health Care Information System
QR	Quick Response
RCCE	Risk Communication and Community Engagement
RHMIS	Reproductive Health Management Information System

RMNCAH	Reproductive, Maternal, Newborn, Child, and Adolescent Health
RO	Regional Office
SHCIS	Secondary Health Care Information System
SRMNCAAH	Sexual, Reproductive, Maternal, Neonatal, Child, Adolescent, and Ageing Health
UN	United Nations
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
USAID	United States Aid
VSSM	Vaccinations Supply Stock Management
WHO	World Health Organization
WMS	Warehouse Management System

Overview

Introduction

The Syrian Arab Republic has a small but increasingly growing digital health ecosystem. Smartphone ownership has been steadily rising along with access to the internet. This has enabled the establishment of some traditional digital health tools across the country but also the rapid growth of the use of messaging services as digital health solutions for both Syrians living in the country and refugees abroad[1].

The current COVID-19 pandemic has only more acutely brought forth the urgency of the presence of a strong and integrated digital health ecosystem. It has also brought forth the urgency of the presence of a strong and integrated digital health ecosystem because this pandemic has necessitated the use of alternative mechanisms for delivering essential Reproductive, Maternal, Newborn, Child, and Adolescent Health (RMNCAH) and reaching the affected populations. The need to reduce unnecessary face-to-face contact with health care providers and the increased demand for innovations that could offer safer and better-quality health services has been increasing.

From the perspective of RMNCAH, the aim of this mapping is to chart and review the situation on the use of digital solutions in RMNCAH program implementation, utilization, and provision of RMNCAH services and its enabling environments, such as digital health infrastructure in the member states of WHO Eastern Mediterranean Region (EMRO) (also including countries covered by UNFPA Arab States Regional Office (ASRO) and UNICEF Middle East and North Africa Regional Office (MENARO)) and to find out about opportunities for effective adoption, integration, and scale-up of digital solutions in RMNCAH so that women, mothers, newborn babies, children, and adolescents can reach and utilize essential RMNCAH services, and health care providers can provide those services effectively and efficiently while they protect their own safety in the context of COVID-19 and beyond. Following this overview, this report presents the digital health tools that are in use in the Syrian Arab Republic with details of their usage and scale, and, where available, information about implementing agencies, donors, etc; briefly presents the enabling environment for digital health in the Syrian Arab Republic; a proposed path forward; and a word of acknowledgment. The report concludes with appendices that provide additional resources and information.

Methodology and Analysis Overview

A joint regional questionnaire for mapping has been developed based on the UNICEF Digital Health Mapping tool, WHO AFRO "Understanding the use of digital health for mitigating the effects of COVID-19 on continuity of essential SRMNCAAH services" and Global Digital Health Index.

The main sources of information are the personnel working at each WHO/ UNFPA/ UNICEF country office, along with other main actors and champions in the field of digital health in the country, including the Ministry of Health. The questionnaire has been sent out from UNICEF MENARO focal point on behalf of three organizations to the country focal points (RMNCAH and digital health).

At the country level, a questionnaire was filled out by a consultant contracted with UNICEF Syrian Arab Republic's country office (CO) from 2022/2 to 2022/6 through working with the key stakeholders including Information Technology Department, Directorates such as Planning and International Cooperation, Logistics, Hospital, Pharmacology, Primary Health

---

[1] The use of Mobile Technology for humanitarian Programming in Syria

Care, Epidemic and Chronic Disease. The interviews were conducted with the staff responsible for Reproductive health, Child and Adolescent Health, Integrated Management of Childhood Illness, Elderly healthcare, vaccine-preventable diseases, and communicable and non-communicable diseases. The information gathered was supplemented with data (when available) from the World Bank's Digital Health Landscaping assessment, the Map & Match exercise by Digital Square, the Digital Health Atlas (DHA), INVENT, and the Digital Impact Alliance (DIAL) Catalog of Digital Solutions. The collated data was entered in the Mapping of Digital Health Tools and Technologies tool.

Thirty-six digital health implementations are currently being used in the Syrian Arab Republic. Twenty-seven are implemented at the national level and nine are implemented at the subnational level. One of them (DHIS2) is considered a global digital public good; and another, KoBo, although not a global digital public good in itself, is built on the Open Data Kit, which is a public good. The rest are either proprietary tools or custom-made.

Strengths

- Most of the digital health interventions in this brief are supported by the MOH, highlighting its commitment.
- Smartphone ownership and access to the internet keeps growing, making it possible to continue to grow and develop the digital health ecosystem in the country.

Gaps

- Many of the tools are bespoke which may lead to fragmentation and siloed implementations as more digital health tools are deployed.
- It appears that tools link to different databases within the Ministry of Health. It is unclear if there is information exchange between these databases.
- Some of the tools appear to not have much uptake despite being implemented at a national scale.
- A shared vision of the future direction of digital health in the Syrian Arab Republic could significantly benefit digital health for health systems strengthening.
- Some of the enabling environments for digital health could be strengthened, such as leadership and governance and the legal framework for data protection and security.
- Likewise, infrastructure, provision of electricity, and internet services need to become more available and affordable to increase the utility of digital tools.
- It is acknowledged that the mapping tool reflects the knowledge of the stakeholders included in the interview(s) and self-assessment and maybe excludes systems not known to them. Engaging with all organizations operating in the health space would be imperative for a more comprehensive view.

Opportunities

- Before deploying new tools, study the potential benefits global digital public goods may have over bespoke (custom made) or proprietary software to ensure interoperability and scalability.
- Continue to explore the possibility of developing and establishing a digital health strategy for the country that will lead the direction of digital health. This could ensure a solid and interoperable digital health ecosystem later on.
- Continue to invest in human resources capacity, relevant infrastructure, and the overall enabling environment to establish a more robust foundation for the digital health ecosystem to grow.

- Foster coordination with other UN agencies, INGOs, and entities engaged in digital health interventions and with the Ministry of Health to ensure a more comprehensive mapping of the digital health ecosystem.

Digital Health Tools and Technologies

National	Subnational
• Primary Health Care Information System (PHCIS)	• Almethaly (Hospital Information System)
• Reproductive Health Management Information System (RHMIS)	• Microsoft Access Database for Local Drugs Pricing
• HIV Information System	• Warehouse Management System (WMS)
• Health Resources Available Mapping System (HeRAMS)	• Vaccinations Supply Stock Management (VSSM)
• Secondary Healthcare Information System (SHCIS)	• DHIS2
• Acute Malnutrition for Children Under Five Years (Excel Sheet)	• CanReg5
• Drugs Information Management System (DIMS)	• Comorbidities Registry
• Microsoft Access Database for Cosmetics and Herbal Products	• Diabetes Information System
• Web Application for Local Drugs Pricing	• Prosthetics Registry (Access)
• Pharmacy Program	
• Early Warning, Alert and Response System (EWARS)	
• Leishmaniasis Registry	
• National Tuberculosis Control Program	
• PCR Platform	

UNICEF | UNFPA | WHO

- [Information for Action Extended Programme of Immunization (EPI) Info (4th edition) (Polio)](#)

- [Measles Registry](#)

- [Covid-19 Vaccine Management Platform](#)

- [Mofadala (Enrollment system)](#)

- [Personnel Affairs Observatory](#)

- [Human Resources and Payroll System](#)

- [Bwork (Electronic Archiving System)](#)

- [Covid-19 Vaccine Certificate](#)

- [QGIS](#)

- [KoBo](#)

- [Who is Where, When, doing What (4Ws) Data Collection Tool](#)

- [SCCPD](#)

Digital Health Tool	Primary Health Care Information System (PHCIS)
Description	A web application with a central database, hosted on the MOH local network. It is used to store and visualize statistical information about all primary health care services which are provided in health facilities such as (malnutrition for children under five years, reproductive healthcare services, family planning methods, child and adolescent healthcare, IMCI, elderly healthcare, oral and dental healthcare, psychological healthcare, etc.). Good uptake by the Primary Health Care Directorate.
Current Use Case(s)	Health Management Information System (HMIS), Data Viz, GIS
Scale	National

Implementer(s)	Private company
Donor(s)/Funding Source	WHO
Licensing	-
Website	-
Covid-19 Specific Functions	-

Digital Health Tool	Reproductive Health Management Information System (RHMIS)
Description	A web application with a central database that is installed locally in most health districts (instead of on a central database at the MOH level). The data is exported and then imported into the central database in the Reproductive Health Department. This app is used to store and visualize statistical information about reproductive health services which are provided in health centers including family planning services. It is also used to manage the distribution of family planning methods in warehouses. Limited uptake at the Primary Health Care Directorate/ Reproductive Health Department.
Current Use Case(s)	Health Management Information System (HMIS), Data Visualization
Scale	National
Implementer(s)	Private company
Donor(s)/Funding Source	UNFPA
Licensing	-
Website	-
Covid-19 Specific Functions	-

Digital Health Tool	Almethaly (Hospital Information System)
Description	Web application with a central database. Hosted on Damascus hospital's local network, administrative sections of the software are already implemented and being used, EMR section of the software is being worked on at the time of conducting this tool. Limited use in Damascus Hospital
Current Use Case(s)	Health Management Information System (HMIS), Electronic Medical Record (EMR)
Scale	Subnational

Implementer(s)	Private company
Donor(s)/Funding Source	Damascus Hospital
Licensing	-
Website	-
Covid-19 Specific Functions	-

Digital Health Tool	**HIV Information System**
Description	The HIV Information System is a web application to store and manage information about HIV patients and their follow-ups. It is not used in the Epidemic and Chronic Disease Directorate.
Current Use Case(s)	HIV Registry, HMIS
Scale	National
Implementer(s)	Private company
Donor(s)/Funding Source	UNDP
Licensing	-
Website	-
Covid-19 Specific Functions	-

Digital Health Tool	**Electronic Health Record (EHR)**
Description	In the context of digital transformation, several projects were approved by the cabinet, and one of them was the Electronic National Health Record project. The project is currently being planned for and its technical frameworks are being defined. Early stages of planning.
Current Use Case(s)	Health Management Information System (HMIS), Electronic Medical Record (EMR)
Scale	Planning Stage
Implementer(s)	-
Donor(s)/Funding Source	Prime Minister Office
Licensing	-

Website	-
Covid-19 Specific Functions	-

Digital Health Tool	Secondary Healthcare Information System (SHCIS)
Description	Web application with a central database, hosted over the internet. Used to store statistical information about human resources, equipment, and services in public MOH hospitals. Used rarely in Planning and International Cooperation Directorate
Current Use Case(s)	Health Management Information System (HMIS)
Scale	National
Implementer(s)	Private company
Donor(s)/Funding Source	WHO
Licensing	-
Website	-
Covid-19 Specific Functions	-

Digital Health Tool	Health Resources Available Mapping System (HeRAMS)
Description	HeRAMS (Health resources and services availability mapping system) is a standardized approach supported by a software-based platform that aims to strengthen the collection, collation, and analysis of information on the availability of health resources and services in humanitarian emergencies. HeRAMS was adapted for Syria in early 2013, after many consultative meetings with the Syrian Ministry of Health and health sector partners to customize the tool according to the priority identified areas of the health sector. The key information that is assessed through HeRAMS includes the functionality status, accessibility, health infrastructure, human resources, availability of health services, equipment, and medicines at primary and secondary care levels. Well used in the Planning and International Cooperation Directorate.
Current Use Case(s)	Community Based Information System
Scale	National

Implementer(s)	WHO
Donor(s)/Funding Source	WHO
Licensing	-
Website	http://www.emro.who.int/syr/herams/herams.html#:~:text=HeRAMS%20(Health%20resources%20and%20services,and%20services%20in%20humanitarian%20emergencies
Covid-19 Specific Functions	-

Digital Health Tool	Acute Malnutrition for Children Under Five Years (Excel Sheet)
Description	Excel sheet used to follow up cases of acute malnutrition for children under five years in hospitals with detailed information. Excel sheets are also used to store statistical information about malnutrition cases for children under five years old that helps decision making and store statistical information about community management of malnutrition cases by providing the necessary consultations on breastfeeding and infant feeding. Useful visualization is created upon the data collection mentioned above. Good uptake in the Primary Health Care Directorate/ Nutrition Department.
Current Use Case(s)	Health Management Information System (HMIS), Community Based Information System
Scale	National
Implementer(s)	MOH
Donor(s)/Funding Source	MOH
Licensing	-
Website	-
Covid-19 Specific Functions	-

Digital Health Tool	Drugs Information Management System (DIMS)
Description	The Drugs Information Management System (DIMS) is a web application with a central database, hosted on the MOH's local network. It is used to register and manage all local and imported pharmaceutical and non-pharmaceutical products in the Syrian market and to register information about factories and manage their faults. This app provides simple tracking to the factories and their production lines. Good uptake in most departments in the Pharmacology Affairs Directorate and

	Pharmacological Control Directorate.
Current Use Case(s)	Pharmacy Information System
Scale	National
Implementer(s)	Private company
Donor(s)/Funding Source	WHO
Licensing	Proprietary
Website	-
Covid-19 Specific Functions	-

Digital Health Tool	Microsoft Access Database for Cosmetics and Herbal Products
Description	The access database is used to store and manage information about cosmetics and herbal products. Although the DIMS has a feature that allows it to store and manage information about cosmetics and herbal products, this Access database takes a shorter time to enter products data due to the data being entered as free text,therefore is more commonly used than DIMS. Good uptake in the Pharmacology Affair Directorate, although there is a delay in entering data.
Current Use Case(s)	Pharmacy Information System
Scale	National
Implementer(s)	MOH
Donor(s)/Funding Source	-
Licensing	Proprietary
Website	-
Covid-19 Specific Functions	-

Digital Health Tool	Microsoft Access Database for Local Drugs Pricing
Description	The Access database Includes the mechanism which is used to price local drugs in Syria, this app has the feature to export data. Good uptake by the Pharmacology Affair Directorate.
Current Use Case(s)	Pharmacy Information System

Scale	Subnational
Implementer(s)	Higher Institute of Applied Sciences and Technology (HIAST)
Donor(s)/Funding Source	MOH
Licensing	Proprietary
Website	-
Covid-19 Specific Functions	-

Digital Health Tool	Web Application for Local Drugs pricing
Description	Web application with a central database hosted on the MOH local network. Includes a detailed mechanism to price local drugs in Syria. This app has the flexibility to alter the mechanism of pricing according to new Acts. This app has the feature to import/export data. This app is not linked automatically to DIMS. No uptake at the Pharmacology Affairs Directorate.
Current Use Case(s)	Pharmacy Information System
Scale	National
Implementer(s)	Private company
Donor(s)/Funding Source	WHO
Licensing	-
Website	-
Covid-19 Specific Functions	-

Digital Health Tool	Pharmacy Program
Description	Microsoft Access interface and database. It is used to manage Immunosuppressive drugs delivered to patients. Well used in the logistics department at the central administration.
Current Use Case(s)	Pharmacy Information System
Scale	National
Implementer(s)	MOH
Donor(s)/Funding	MOH

Source	
Licensing	-
Website	-
Covid-19 Specific Functions	-

Digital Health Tool	Warehouse Management System (WMS)
Description	Desktop application with a central database, hosted on MOH local network. It is used to manage the logistics distribution in central administration warehouses. Poor uptake at the Logistics Directorate due to poor design.
Current Use Case(s)	Logistics Management Information System (LMIS)
Scale	Subnational
Implementer(s)	Private company
Donor(s)/Funding Source	MOH
Licensing	-
Website	-
Covid-19 Specific Functions	-

Digital Health Tool	Vaccinations Supply Stock Management (VSSM)
Description	Web application with a central database, hosted on MOH local network. It is used for vaccine handling, distribution, and tracking of vaccines. Used by the Logistics Directorate and the Primary Health Care Directorate
Current Use Case(s)	Immunization Stock Forecasting
Scale	Subnational
Implementer(s)	WHO
Donor(s)/Funding Source	WHO
Licensing	-
Website	-

Covid-19 Specific Functions	-

Digital Health Tool	Early Warning, Alert and Response System (EWARS)
Description	WHO's Early Warning, Alert and Response System (EWARS) is designed to improve disease outbreak detection in emergency settings, such as in countries in conflict or following a natural disaster. It is a simple and cost-effective way to rapidly set up a disease surveillance system. In Syria, it is used to store and visualize statistical information about early warnings and alerts of suspected cases of certain Communicable diseases (leishmaniosis, TB), and Diseases covered by EPI (Expanded Program of Immunization). Good uptake in the Epidemic and Chronic Disease Directorate and Primary Health Directorate.
Current Use Case(s)	Public Health and Disease Surveillance System
Scale	National
Implementer(s)	WHO
Donor(s)/Funding Source	WHO
Licensing	-
Website	EWARS
Covid-19 Specific Functions	-

Digital Health Tool	Leishmaniasis Registry
Description	The Leishmaniasis Registry is an access interface and database. Good uptake in Epidemic and Chronic Disease Directorate
Current Use Case(s)	Public Health and Disease Surveillance System
Scale	National
Implementer(s)	MOH
Donor(s)/Funding Source	MOH
Licensing	-
Website	-
Covid-19 Specific	-

Functions	

Digital Health Tool	**National Tuberculosis Control Program**
Description	Web application with a central database used to manage information about tuberculosis patients and their medications. Not used in Epidemic and Chronic Disease Directorate
Current Use Case(s)	Public Health and Disease Surveillance System
Scale	National
Implementer(s)	Private company
Donor(s)/Funding Source	UNDP
Licensing	-
Website	-
Covid-19 Specific Functions	-

Digital Health Tool	**PCR platform**
Description	Web application with a central database used to register a COVID-19 test for travel purposes and to print result certificates.
Current Use Case(s)	Public Health and Disease Surveillance System
Scale	National
Implementer(s)	Ministry of Foreign Affairs
Donor(s)/Funding Source	-
Licensing	-
Website	-
Covid-19 Specific Functions	-

Digital Health Tool	**Information for Action Extended Programme of Immunization (EPI) Info (4th edition) (Polio)**
Description	Desktop application, used to store and visualize cases of polio for children under fifteen years of age and follow-ups; analyze information; and issue indicators (incidence rate, reporting rate, number of

	suspected cases). Good uptake by the Primary Health Care Directorate/ Child health Department
Current Use Case(s)	Public Health and Disease Surveillance System
Scale	National
Implementer(s)	WHO
Donor(s)/Funding Source	WHO
Licensing	-
Website	-
Covid-19 Specific Functions	-

Digital Health Tool	**Measles Registry (Access database)**
Description	Microsoft Access interface and database. It is used to store and visualize Measles patients' information, analyze information, and issue indicators (incidence rate, reporting rate, number of suspected cases). Good uptake by the Primary Health Care Directorate/ Child health Department
Current Use Case(s)	Public Health and Disease Surveillance System
Scale	National
Implementer(s)	WHO
Donor(s)/Funding Source	WHO
Licensing	-
Website	-
Covid-19 Specific Functions	-

Digital Health Tool	**DHIS2**
Description	DHIS2 is used as a national health information system platform for integrated data management and analysis for program monitoring and evaluation in 70+ countries. It is primarily used for reporting and analysis of routine health data; but also serves as a de facto facility registry, can be deployed for service availability mapping and other periodic survey activities, and as a data warehouse to facilitate integrated analysis. Increasingly, it is also used as a 'last-mile' solution for logistics

monitoring, particularly at the health facility level.

DHIS2 comes with three data models 1) aggregate, 2) single events (e.g. for line-listing data), and 3) longitudinal tracking of any entity (patient or otherwise) over time. The core DHIS2 software includes a number of web apps for data capture, analysis, reports, maintenance, user management, data quality, etc. The tracker model supports use cases such as case-based surveillance and patient follow-up and can be used in tandem with other data models. In addition, an Android app is a core component of the platform to enable out-of-the-box mobile data collection with no interoperability layers required. A DHIS2 Android Software Development Kit (SDK) enables developers to customize mobile application interfaces that integrate natively with DHIS2, supporting all three data models (aggregate, event, tracker). DHIS2 is entirely generic and configurable through a web interface, which means it can be used for any number of use cases.

In Syria, it is used as an electronic comprehensive timeline of all vaccinations received by children and mothers. Used by the MOH central administration and health directorates. Not used yet in the Primary health care Directorate.

Current Use Case(s)	Immunization Delivery Monitoring
Scale	Subnational
Implementer(s)	WHO/Oslo university
Donor(s)/Funding Source	WHO
Licensing	Open Source
Website	https://dhis2.org/
Covid-19 Specific Functions	Digital packages for COVID-19 capitalize on the core functionality of DHIS2 and the DHIS2 Android Capture app to support COVID-19 surveillance and response activities. COVID-19 metadata packages are modular in nature and can be installed together or separately in a country's DHIS2 system: ● COVID-19 Case-based surveillance [tracker data model]: enrolls & tracks suspected cases; captures symptoms, demographics, risk factors & exposures; creates lab requests and captures laboratory data about the case; links confirmed cases with contacts, and monitors patient outcomes. This package can be installed as a standalone COVID-19 form or can be integrated into a country's existing integrated disease surveillance & response tracker. ● Contact registration & follow-up program [tracker data model]: strengthen active case detection through contact tracing activities, such as identification and follow-up of contacts of a suspected or confirmed COVID-19 case. ● Ports of Entry screening & follow-up program [tracker]: enrolls travelers who have visited high-risk locations at Ports of Entry for

14-day monitoring and follow-up.
- COVID-19 Surveillance Event Program [event]: a simplified line-list that captures a subset of minimum critical data points to facilitate rapid analysis & response, particularly useful when caseloads or burden of reporting exceeds capacity for case-based surveillance tracker
- COVID-19 Aggregate Surveillance [aggregate]: an aggregate reporting dataset that captures minimum necessary data points for daily or weekly reporting. Core DHIS2 functionality to support COVID-19 includes: longitudinal tracking of suspected and confirmed COVID-19 cases (through Tracker data model), line-listing (through Event data model), alerts & notifications (e.g. thresholds), working lists, DHIS2 Android App for seamless mobile data capture, automated dashboards, on-the-fly calculation of key indicators and data-push features for exporting and sharing COVID-19 data.

Digital Health Tool	Covid-19 Vaccine Management Platform
Description	Web application with a central database over the Internet. It is used to store information about Covid-19 vaccinated people including the type of vaccine and number of doses. Used by MOH central administration and health directorates.
Current Use Case(s)	Immunization Delivery Monitoring
Scale	National
Implementer(s)	WHO
Donor(s)/Funding Source	WHO
Licensing	-
Website	-
Covid-19 Specific Functions	-

Digital Health Tool	Mofadala (Enrollment system)
Description	Web application with a central database, hosted on MOH local network. It is used in health directorates to register accommodation desires for specialties (doctors, dentists, pharmacists) then desire selections are executed centrally in the Syrian commission for medical specialties. Good uptake by the Syrian Commission for Medical Specialties.
Current Use Case(s)	Health Worker Registry
Scale	National

Implementer(s)	Private company
Donor(s)/Funding Source	MOH
Licensing	-
Website	-
Covid-19 Specific Functions	-

Digital Health Tool	Personnel Affairs Observatory
Description	Web application with central database over the Internet. It is used in all health directorates and MOH hospitals. Used to manage all MOH employees' basic information (designations, training, transition...). Well used in the Administrative development directorate (HR unit).
Current Use Case(s)	Health Worker Registry
Scale	National
Implementer(s)	Private company
Donor(s)/Funding Source	MOH
Licensing	-
Website	-
Covid-19 Specific Functions	-

Digital Health Tool	Human Resources and Payroll System
Description	Web application with a central database. Hosted on MOH local network. It is used to manage the information and salaries of employees of the central administration. Well used in Human Resource directorate at the central administration level
Current Use Case(s)	Health Worker Registry
Scale	National
Implementer(s)	Private company
Donor(s)/Funding Source	MOH
Licensing	-

Website	-
Covid-19 Specific Functions	-

Digital Health Tool	**Bwork (Electronic Archiving System)**
Description	Web application with a central database, hosted on MOH local network. The Documents of all health care professionals and health facilities all over Syria have been electronically archived using this application. Well used in MOH in certain directorates: Medical license, planning and international cooperation, and administrative development (Dewan).
Current Use Case(s)	Health Worker Registry
Scale	National
Implementer(s)	Private company
Donor(s)/Funding Source	MOH
Licensing	-
Website	-
Covid-19 Specific Functions	-

Digital Health Tool	**Covid-19 Vaccine Certificate**
Description	Vaccine certificate can be printed out with QR code to validate vaccine information online, using Covid-19 Vaccines Management Platform. MoH central administration and health directorates
Current Use Case(s)	Electronic Vaccine Certificate
Scale	National
Implementer(s)	MOH
Donor(s)/Funding Source	WHO
Licensing	-
Website	-
Covid-19 Specific Functions	-

Digital Health Tool	CanReg5
Description	CanReg5 is an open source tool to input, store, check and analyze cancer registry data. It has modules to do data entry, quality control, consistency checks, and basic analysis of the data. The main improvements from the previous version are the new database engine, the improved multi-user capacities, and the development is managed as an open source project. Also included is a tool to facilitate the set up of a new or modification of an existing database by adding new variables, tailoring the data entry forms, etc. Poor uptake by the Epidemic and Chronic Disease Directorate and five hospitals.
Current Use Case(s)	Cancer registry
Scale	Subnational
Implementer(s)	WHO
Donor(s)/Funding Source	WHO
Licensing	-
Website	http://www.iacr.com.fr/index.php?option=com_content&view=article&id=9:canreg5&catid=68&Itemid=445
Covid-19 Specific Functions	-

Digital Health Tool	Comorbidities Registry
Description	The comorbidities registry is an access interface with an SQL database used to store information about Arthritis patients and their follow-ups. The app is used almost in all governorates with a lot of reservations from the IT department. Good uptake in the Epidemic and Chronic Disease Directorate. The registry has information on ● Arthritis ● Multiple Sclerosis ● Hepatitis ● Thalassemia
Current Use Case(s)	Comorbidities registry
Scale	Subnational
Implementer(s)	Private company

Donor(s)/Funding Source	Hoffmann–La Roche
Licensing	Proprietary
Website	-
Covid-19 Specific Functions	-

Digital Health Tool	**Diabetes Information System**
Description	The diabetes information system has an access interface and database. It is used to store basic information about Diabetes patients. Poor uptake in the epidemic and chronic disease Directorate
Current Use Case(s)	Diabetes registry
Scale	Subnational
Implementer(s)	MOH
Donor(s)/Funding Source	MOH
Licensing	-
Website	-
Covid-19 Specific Functions	-

Digital Health Tool	**Prosthetics Registry (Access)**
Description	Microsoft Access interface and database. Used to store information about amputation patients (injury, manufacturing, and repair of prosthetics). Used by the Prosthetics Directorate.
Current Use Case(s)	Registry
Scale	Subnational
Implementer(s)	MOH
Donor(s)/Funding Source	MOH
Licensing	Proprietary
Website	-
Covid-19 Specific	-

Functions	

Digital Health Tool	**QGIS**
Description	QGIS is a professional GIS application that is built on top of and proud to be itself Free and Open Source Software (FOSS). QGIS is a user friendly Open Source Geographic Information System (GIS) licensed under the GNU General Public License. QGIS is an official project of the Open Source Geospatial Foundation (OSGeo). It runs on Linux, Unix, Mac OSX, Windows and Android and supports numerous vector, raster, and database formats and functionalities. In Syria, it is used to analyze and edit spatial information about cases of polio for children under fifteen years of age. This app is related and integrated with previous EPI Info (Polio). Used in the Primary health care Directorate/ Child Health Department.
Current Use Case(s)	Geographic Information System (GIS)
Scale	Subnational
Implementer(s)	WHO
Donor(s)/Funding Source	WHO
Licensing	Open Source
Website	https://qgis.org/en/site/
Covid-19 Specific Functions	The widespread use of GIS for COVID-19 response has demonstrated the power of geospatial thinking and the scalability, speed, and insight provided by GIS. More than simply mapping phenomena, GIS uses geography to furnish context for events in a common reference system. Applying spatial analysis tools, GIS brings out the relationships, patterns, and associations that are often hidden by the complexity of data. More information on the possible uses of GIS technology for COVID-19 can be found here.

Digital Health Tool	**KoBo**
Description	KoBoToolbox is a suite of tools for field data collection for use in challenging environments. Our software is free and open source. Most of our users are people working in humanitarian crises, as well as aid professionals and researchers working in developing countries. Our teams of developers and researchers are based in Cambridge, MA and many other places around the world. In Syria, it is used to collect data about community engagement and encourage demand creation for Covid-19 vaccination. Used in Primary Health Care Directorate.

Current Use Case(s)	Mobile Data Collection
Scale	National
Implementer(s)	UNICEF
Donor(s)/Funding Source	UNICEF
Licensing	Open Source
Website	https://www.kobotoolbox.org/
Covid-19 Specific Functions	As part of their efforts to support the humanitarian community and contribute to the global fight against the pandemic, KoBo has lifted data storage limits for all projects related to COVID-19. More information can be found here.

Digital Health Tool	**Who is Where, When, doing What (4Ws) Data Collection Tool**
Description	Humanitarian actors in emergencies often encounter challenges in knowing Who is Where, When, doing What (4Ws) with regards to mental health and psychosocial support (MHPSS). Such knowledge is essential to identify gaps in humanitarian response. 4Ws tools are used in many areas of aid to map activities conducted across large geographical areas. 4Ws tools generally aim to map support by government and non-governmental agencies, including pre-emergency services and support. In Syria, the tool is used to store Information about the awareness campaigns carried out to protect children from remnants of war. Good uptake in the Primary Health Care Directorate
Current Use Case(s)	Risk Communication and Community Engagement (RCCE)
Scale	National
Implementer(s)	UNICEF
Donor(s)/Funding Source	UNICEF
Licensing	-
Website	-
Covid-19 Specific Functions	-

Digital Health Tool	**SCCPD**
Description	Web application used to store capacity building training followed by

	doctors, dentists, and pharmacists. Not used by the Syrian Committee for Continuous Professional Development.
Current Use Case(s)	Learning Management System (LMS)
Scale	National
Implementer(s)	MOH
Donor(s)/Funding Source	MOH
Licensing	-
Website	-
Covid-19 Specific Functions	-

Digital Health Tool	Cost Control System
Description	Web application with a central database, hosted on MOH local network. Hospitals can insert their cost control data on excel sheet templates, which are generated from the application and then can be imported to the application. Not used in Planning and International Cooperation Directorate, and certain MOH hospitals
Current Use Case(s)	-
Scale	National
Implementer(s)	Private company
Donor(s)/Funding Source	WHO
Licensing	-
Website	-
Covid-19 Specific Functions	-

Auxiliary tools

Tool	Common Operational Datasets (COD)
Description	CODs are authoritative reference datasets used to support operations and decision-making in the initial response to humanitarian emergencies as well as to enable activities such as micro-planning. Frequently collected and used CODs are geographical shapefiles, health facility catchment areas, settlements, population estimates, satellite imagery,

	and ancillary geospatial layers.
Current Use Case(s)	Common Operational Datasets
Scale	National
Access to CODs	Syria's CODs

Tool	Radio and TV
Description	Awareness raising through TV and radio advertisement
Current Use Case(s)	
Scale	National
Implementer(s)	UNICEF
Donor(s)/Funding Source	UNICEF

RMNCAH Indicators

The HMIS collects the following RMNCAH indicators on a monthly basis:

- Number of live births
- Number of Maternal deaths
- Number of pregnant women and adolescent girls who attended 1st ANC
- Number of pregnant women and adolescent girls who attended 4th ANC
- Number of total deliveries
- Neonatal mortality rate/ number of newborn deaths
- Under-five mortality rate/ number of under-five deaths
- Number of children under 5 with diarrhea who received treatment according to national guidelines
- Number of children under 5 diagnosed with pneumonia that were treated with amoxicillin

RMNCAH indicators collected through specific information system

(PHCIS: Primary Health Care Information System, RHMIS: Reproductive Health Management Information System)

- Oral contraceptive distribution (number) (PHCIS and RHMIS)
- Injectable contraceptive distribution (number) (PHCIS and RHMIS)
- Pregnant women tested for HIV (number/%)

    (Initial data collection by paper format and entered into Excel file)

- Pregnant women living with HIV who received antiretroviral medicine to reduce the risk of mother-to-child transmission (number)

    (Initial data collection by paper format and entered into Excel file)

- Postnatal care for women (number/%) (PHCIS and RHMIS)
- DTP3 vaccine (number) (PHCIS)
- MCV1 vaccine (number) (PHCIS)

- Treatment of children with malaria (number/%)

    (Initial data collection by paper format and entered into Excel file)

- Consultations for child health (number) (PHCIS)
- Iron supplementation for prenant women (number/%) (PHCIS and RHMIS)
- Screening of children for severe waiting and bilateral pitting edema (number) (PHCIS)
- Severe wasting and bilateral pitting edema (number) (PHCIS)
- Severe wasting and bilateral pitting edema discharges recovered (%) (PHCIS)
- Early initiation of breastfeeding of newborns (number/%) (PHCIS through Nutritional Surveillance Program Report)
- Completeness of health management information system or community health information system reporting (%) (PHCIS)
- Stockouts for RMNCAH+N commodities (number/%)

    (Initial data collection by paper format and entered into Excel file)

- Stillbirths (%) (PHCIS and RHMIS)
- Low-birth weight (<2500 grams) among newborns (number/%) (PHCIS)
- Maternal deaths (number) (PHCIS)
- Suspected measles cases identified (number) and confirmed (number) (PHCIS)
- Maternal and infant consultations by CHWs (number) (Excel file)

The Health Worker Registry collects the following information relevant to RMNCAH:

- Obstetrician/ Gynecologists
- Paediatrician
- Midwife
- Nurse
- In-service trainings

The Electronic Immunization Record tracks under-five immunizations.

The Master Facility Registry includes information on the number of beds in delivery rooms, NICU, and pediatric wards.

Enabling Environment

Infrastructure

- Electricity supply is unstable, and years of crisis have affected the possibility of providing a continuous electricity supply. The use of generators is not a stable solution due to the difficulty of getting fuel.
- It is estimated that 96% of the population has access to at least a 3G network since, during the past two years, there has been an improvement in communication, including the use of optical linkage.
- More information can be found here (Arabic).

Leadership and Governance

- Although there is no Digital Health Strategy, the Syrian government has a digital transformation strategy.
- The Ministry of Health, in cooperation with the Ministry of Communication and Technology, is working on a sectoral digital health strategy under the Cabinet's umbrella. A digital health focal point has been named (Deputy minister for technical affairs) and a project manager for digital health transformation (IT manager). Currently, a task force for digital health has been formed.

Legal Framework for Data Protection and Security

- The Network Services Authority of the Ministry of Communication and Technology has developed frameworks for a set of information security policies and information services. They can be accessed here.
- Some perceived barriers are the availability of quality expertise in the field of information security which prevents access to technologies related to information security.

Laws or Regulations for Privacy, Confidentiality, and Access to Health Information

- There are no laws to protect individual privacy governing ownership, access, and sharing of individually identifiable digital health data yet; however, the first steps started with the Anti-Cybercrime Law and its executive instructions.
- More information can be accessed here (Arabic).

Mechanism to monitor/ measure the implementation of digital solutions on RMNCAH, including specific indicators

- None/Unknown

The Way Forward

The Syrian Arab Republic has a small but growing digital health ecosystem. The mapping exercise explores a part of the key seven categories of the enabling environments recommended by the Global Digital Health Index: Leadership and governance, Legislation, Policy, and Compliance, and Infrastructure (Figure 1).

In terms of Infrastructure, due to years of crisis, electricity supply is unstable. However, smartphone ownership has been steadily rising along with access to the internet (96% of the population has access to at least a 3G network).

For Leadership and Governance, the Syrian government has been taking up leadership on strategic direction. The country has a digital transformation strategy and the Ministry of Health, in cooperation with the Ministry of Communication and Technology, is working on a sectoral digital health strategy under the Cabinet's umbrella. The key responsible persons have been appointed including a digital health focal point and a project manager for digital health transformation. Currently, a task force for digital health has been formed.

For Legal Framework for data protection and security and Laws and Regulations for privacy, confidentiality and access, the Ministry of Communication and Technology has developed frameworks for a set of information security policies and information services, however, the expertise in this field is still lacking. No laws are available to protect individual privacy governing ownership, access, and sharing of individually identifiable digital health data, however, the first steps started with the Anti-Cybercrime Law and its executive instructions.

The country has thirty-six digital health tools being used and twenty-seven are implemented at the national level and nine are implemented at the subnational level (Table 2). These tools address five of eight health system challenges which are described in the WHO Classification of Digital Health Interventions v1.0 and a health system challenge related to Information is best addressed (Table 2). Except for two digital health tools (DHIS) and Open Data Kit (KoBo built on the Open Data Kit), all of them are either bespoke or proprietary. Several digital health tools have been developed by the Ministry of Health and individual UN agencies to serve for similar objectives or collect similar/ overlapping data. As most of the tools are bespoke or proprietary and they may not have interoperability among them, this could make the scale-up of digital health difficult in future.

Digital health tools in Syria cover various thematic areas including RMNCAH (Table 3). Most of the key RMNCAH indicators have already been integrated into HMIS and Healthworker/ facility registries include information related to RMNCAH. The country also sees potential of digital health to address shortage of human resources, poor logistic availability, ineffective follow-up based on up-to-date data, and lack of awareness and reliance on rumours which led to a decrease in the demand of services or follow-up of the health conditions.

For a way forward, national digital health strategy could reinforce the government's leadership and governance in addition to digital transformation strategy. The national digital health strategy should include a direction how the key categories of the enabling environment could be strengthened. In addition to the current ongoing initiatives on legal frames, laws and reguations, "Services and Application" and "Standards and Interoperability" should be considered , including the use of digital public goods to avoid fragmentation and siloed implementations when the existing digital health tools are integrated/ scaled up or more digital health tools are deployed. It is also essential to invest more on Workforce to facilitate the use of digital health tools as many of the tools have been implemented at the national level. The country has been utilising digital health tools for a variety of health thematic areas and this is an advantage if interoperability is ensured. It is an

exciting and interesting journey ahead as the country moves forward on a scaler-up with a strong commitment from the government.

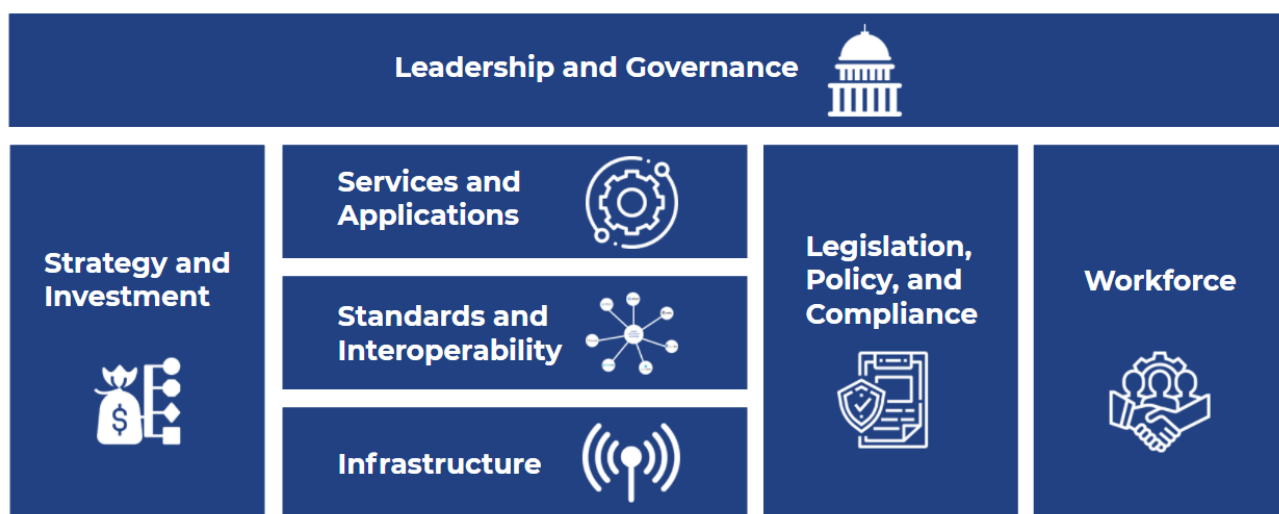Figure 1. Key seven categories of the enabling environment

Table 1. Health system challenges possibly addressed by digital health tools

Health system challenges	Digital health tools	Levels of implementation
Information	Primary Health Care Information system Reproductive Health Management Information System Drugs Information Management System Acute Malnutrition for Children Under Five Years HIV Information system Health Resources Available Mapping System (HeRAMS) Secondary Healthcare Information System (SHCIS) Personnel Affairs Observatory Human Resources and Payroll System Bwork (Electronic Archiving System) Microsoft Access Database for Cosmetics and Herbal Products Web Application for Local Drugs pricing Pharmacy Program Early Warning, Alert and Response System Leishmaniasis Registry National Tuberculosis Control Program PCR platform Information for Action Extended Programme of Immunization (EPI) Info (4th edition) (Polio) Measles Registry	National

	QGIS (Polio) Covid-19 Vaccine Management Platform Covid-19 Vaccine Certificate Mofadala (Enrollment system) Common Operational Datasets (Humanitarian emergencies response)	
	DHIS2 Almethaly (Hospital Information System) Microsoft Access Database for Local Drugs Pricing Warehouse Management System Vaccinations Supply Stock Management CanReg5 Diabetes Information System Prosthetics Registry (Access) Comorbidities Registry	Subnational
Availability	Drugs Information Management System Mofadala (Enrollment system) Health Resources Available Mapping System (HeRAMS) Pharmacy Program Secondary Healthcare Information System (SHCIS)	National
	Warehouse Management System Vaccinations Supply Stock Management	Subnational
Quality	Acute Malnutrition for Children Under Five Years Personnel Affairs Observatory SCCPD	National
Acceptability		
Utilisation		
Efficiency		
Cost	Cost Control System	National
Accountability	KoBo (COVID-19) Who is Where, When, doing What (4Ws) Data Collection Tool	National

Table 2. Thematic areas and use of digital health tools

Thematic areas	Syria
RMNCAH	Primary Health Care Information System Reproductive Health Management Information System Acute Malnutrition for Children Under Five Years Information for Action Extended Programme of Immunization (EPI) Info (4th edition) (Polio) Measles Registry QGIS (Polio) Who is Where, When, doing What (4Ws) Data Collection Tool
Communicable disease	Primary Health Care Information System HIV Information system Pharmacy Program (HIV) Early Warning, Alert and Response System Leishmaniasis Registry National Tuberculosis Control Program PCR platform (COVID-19) Covid-19 Vaccine Management Platform Information for Action Extended Programme of Immunization (EPI) Info (4th edition) (Polio) Measles Registry Comorbidities Registry (Arthritis, multiple sclerosis, hepatitis and thalassemia) QGIS (Polio) KoBo (COVID-19)
Immunisation	DHIS2 Early Warning, Alert and Response System Information for Action Extended Programme of Immunization (EPI) Info (4th edition) (Polio) QGIS (Polio) Measles Registry Covid-19 Vaccine Certificate KoBo (COVID-19)
Public Health Emergency & humanitarian emergencies	Health Resources Available Mapping System (HeRAMS) Early Warning, Alert and Response System QGIS (Polio) Common Operational Datasets (Humanitarian emergencies response)
Risk Communication and Community engagement	KoBo (COVID-19) Who is Where, When, doing What (4Ws) Data Collection Tool

Acknowledgments

This brief is a collaborative work of the WHO Regional Office for the Eastern Mediterranean, the UNFPA Arab States Regional Office and UNICEF Headquarters and Regional Office for the Middle East and North Africa. We extend our most sincere gratitude to the Ministry of Health and the Country Offices of three organizations for their contribution to and collaboration on this document.

UNICEF and the World Health Organization (WHO) have co-founded the COVID-19 Digital Health Center of Excellence (DICE) to provide coordinated, standardized support and technical assistance to national governments and partners on digital health implementations and solutions, including COVID-19, COVID-19 vaccine delivery, and beyond. If you would like to request support from the DICE, please write to contact@digitalhealthcoe.org.

Appendix: Use Case Definitions

Use Case	Description
Civil Registration and Vital Statistics (CRVS)	Digital systems used to record statistics on vital events, such as births, deaths, marriages, divorces, and fetal deaths
Cold Chain Equipment Inventory	Technology to continually keep track of cold chain equipment status (inventory and working status)
Cold Chain Monitoring	Technology to continually monitor temperature-sensitive products being transported in a "cold chain"—that is, a supply chain of perishable and/or temperature-sensitive
Common Operational Datasets	Authoritative reference datasets needed to support operations and decision-making for all actors in a humanitarian response.
Community Based Information System (CBIS)	Family-centered health information system designed for CHWs to manage their work in educating households and delivering an integrated package of promotive, preventive, and basic curative health services
Comorbidity Registry	The presence of comorbidities can significantly affect a patient's treatment options, quality of life, and survival. Comorbidity registries keep track of comorbidities which help inform medical decisions
Contact Tracing	Contact tracing is the process of identifying all people that a positive patient has come in contact with
Core Mobile Services	Services used by GSM cellular phones (feature phones) (SMS Aggregator, SMS Shortcode, IVR Shortcode, USSD Services)
Data Visualization	Digital tools used for graphical representation of information and data
Digital Yellow Card	Digital credentialing for vaccinations
Electronic Medical Record (EMR)	Electronic record for patients - includes information about a patient's health history, such as diagnoses, medicines, tests, allergies, immunizations, and treatment plans
Geographic Information System	Framework for gathering, managing, and analyzing data
Health Management Information Systems (HMIS)	Data collection system to support planning, management, and decision making in health facilities and organizations. It can provide reliable and timely info on health system performance
Health Worker Registry	A registry of all the health workers in the country
Immunization Delivery Monitoring	Digital tools that are used for vaccine handling, distribution, and tracking of vaccines
Immunization Forecasting	The Immunization Calculation Engine (ICE) is an immunization evaluation and forecasting system, whose default immunization schedule supports all routine childhood, adolescent, and adult immunizations. ICE evaluates a patient's immunization history and generates the appropriate immunization recommendations for patients

Immunization Stock Forecasting	System or platforms that can forecast vaccine orders based on utilization which can enable COs to identify risks of stock outs or overstocking and take action before they occur
Interactive Voice Response (IVR)	Automated phone system technology that allows incoming callers to access information via a voice response system of pre-recorded messages
Laboratory and Diagnostics Information Systems (LDIS)	Software system that records, manages, and stores data for laboratories and can send laboratory test orders to lab instruments, tracking those orders, and then recording the results
Logistics Management Information System (LMIS)	System of records and reports used to aggregate, analyze, validate, and display data (from all levels of the logistics system) that can be used to make logistics decisions and manage the supply chain. Includes stock on hand, losses and adjustments, consumption, demand, issues, shipment status, and information about the cost of commodities managed in the system
Master Facility Registry	Comprehensive repository of health facilities of the country - would include all admin information and the status of the facility, staff, CCes, etc.
Mobile Community Health Worker Learning Management System (CHW LMS)	Learning management systems functioning in the country for community health workers
National ID	Digital national identity systems
Patient Registry	A patient registry is an organized system that uses observational study methods to collect uniform data (clinical and other) to evaluate specified outcomes for a population defined by a particular disease, condition, or exposure, and that serves one or more predetermined scientific, clinical, or policy purposes.
Pharmacy Information System	Supports the distribution and management of drugs, shows drug and medical device inventory, and facilitates preparing needed reports
Public Health and Disease Surveillance	Contributes data and information to assess and characterize the burden and distribution of adverse health events, prioritize public health actions, monitor the impact of control measures, and identify emerging health conditions that may have a significant impact upon population health
RapidPro	RapidPro is a software product that allows you to visually build the workflow logic for running mobile-based services. This software includes features for managing your users' contacts dynamically, graphically analyzing the data your service receives, connecting to multiple communication channels (ie SMS, voice, USSD, and social media), sending messages in multiple languages, and interoperating with external systems

Social Media for Risk Communication and Community Engagement (RCCE)	Utilization of social media for health messaging dissemination
Social Monitoring	Capture of what is said in social media platforms
Telemedicine	Platform used by providers to connect with patients and share video and images. It can be integrated with a provider's electronic health record and scheduling systems
Track and Trace System	Track and Trace systems enable the traceability/visibility of products from origin through various distribution processes down to patient
Traditional Media	Traditional media that may be used for outreach and messaging (TV, radio, other)

Additional Resources

Resources	Description	Website
Mapping of Digital Health Tools and Technologies in Countries (View only)	This workbook indicates the presence of tools and digital technologies being used for health initiatives and other sectors in UNICEF Country Offices (COs)	http://uni.cf/mapping-digital-health
M&M Global goods possible use cases	This document provides a list of Digital Square approved global goods mapped across the use cases visualized in the DATEC. The global goods are grouped by those that have already been adapted to match a use case and those that could be adapted to match a use case (i.e., simple, easy, low-lift adaptations).	https://static1.squarespace.com/static/59bc3457ccc5c5890fe7cacd/t/60522885399dca3568666606/1615997063979/Global+Goods+COVID+Map.pdf
Digital Implementation Investment Guide (DIIG): Integrating Digital Interventions into Health Programmes	This practical guide provides a systematic process for countries to develop a costed implementation plan for digital health within one or more health program areas, drawing guidance from the WHO guideline-recommended digital health interventions, providing direction to ensure investments are needs-based and contribute effective and interoperable systems aligned with national digital architecture, country readiness, health system and policy goals.	https://www.who.int/publications/i/item/9789240010567
Digital Health Atlas	The Digital Health Atlas is a WHO global technology registry platform aiming to strengthen the value and impact of digital health investments, improve coordination, and facilitate institutionalization and scale.	https://digitalhealthatlas.org/en/-/
Global Digital Health Index Country Profile	The Global Digital Health Index is an interactive digital resource that tracks, monitors, and evaluates the use of digital technology for health across countries.	http://index.digitalhealthindex.org/map

Assessing country readiness for COVID-19 vaccines	The country readiness assessments for COVID-19 vaccines are undertaken jointly by governments; the World Bank; Gavi, the Global Vaccine Alliance; the Global Fund to Fight AIDS, Malaria and Tuberculosis; UNICEF and the World Health Organization. This report presents initial findings of 128 countries as of March 2021	https://documents1.worldbank.org/curated/en/467291615997445437/pdf/Assessing-Country-Readiness-for-COVID-19-Vaccines-First-Insights-from-the-Assessment-Rollout.pdf
DICE Website	The Digital Health Centre of Excellence - or DICE - is a mechanism to deliver agile and coordinated technical assistance to National Governments on sustainable and scalable deployment of carefully chosen mature digital health solutions that address health priorities in the context of the COVID-19 pandemic and post-pandemic health systems needs	https://www.digitalhealthcoe.org/
DICE's YouTube Channel	DICE's YouTube Channel where past webinars can be accessed	https://www.youtube.com/channel/UCi--Kf5uVzYv-unxv7DqR9g/featured
ITU Digital Development Dashboard for the Syrian Arab Republic	An overview of the state of digital development in the Syrian Arab Republic based in ITU's data	https://www.itu.int/en/ITU-D/Statistics/Dashboards/Pages/Digital-Development.aspx